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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,597	02/26/2004	Kari Niemela	60091.00249	4374

32294 7590 11/15/2005

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EXAMINER

LY, NGHI H

ART UNIT PAPER NUMBER

2686

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/786,597	NIEMELA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Nghi H. Ly	2686	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-15 and 19 is/are rejected.
- 7) ☒ Claim(s) 8-10 and 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/06/04; 09/06/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-7, 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raleigh et al (US 6,101,399) in view of Pasternak (US 2003/0194973A1).

Regarding claims 1, 11 and 19, Raleigh teaches a base station of a cellular telecommunication system (see Abstract and fig.2A), comprising: an antenna unit for radio frequency reception and transmission (see fig.2A, antenna 56), an electronically diplexer connected to the antenna unit for separating a transmit radio frequency band

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from a receive radio frequency band (see fig.2A, diplexer 58, column 3, lines 49-55 and column 5, lines 5-8), a range of the electronically diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system (see column 3, lines 44-49 and column 22, lines 25-31), the electronically diplexer, on site, to a radio frequency subband allocated to a base station (see column 3, lines 33-55), a transceiver connected to the electronically diplexer for performing a conversion between a fixed frequency band and the radio frequency sub-band allocated to the base station (see fig.2A), and wherein the transceiver includes a signal conversion chain for performing at least a portion of the conversion (see column 8, lines 22-51), at least a portion of the signal conversion chain being shared between frequencies within the tuning range (see column 11, lines 26-37 and column 8, lines 22-51).

Raleigh teaches a diplexer (see fig.2A, diplexer 58). Raleigh does not specifically disclose a tunable diplexer.

Pasternak teaches a tunable diplexer (see Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Pasternak into the system of Raleigh in order to tune to other frequencies and reduce the number of fixed diplexers.

Regarding claims 2 and 12, the combination of Raleigh and Pasternak further teaches the electronically tunable diplexer is configured to operate in a receive tuning range covering receive sub-bands of at least two system bands, the electronically tunable diplexer being tunable (see Pasternak, Abstract and [0005]), on site, to a

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receive sub-band allocated to the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Regarding claims 3 and 13, the combination of Raleigh and Pasternak further teaches the electronically tunable diplexer is configured to operate in a transmit tuning range covering transmit sub-bands of at least two system bands, the electronically tunable diplexer being tunable (see Pasternak, Abstract), on site, to a transmit sub-band allocated to the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Regarding claims 4 and 14, the combination of Raleigh and Pasternak further teaches the electronically tunable diplexer is configured to operate in a receive tuning range covering at least two receive sub-bands of a system band, the electronically tunable diplexer being tunable (see Pasternak, Abstract and [0005]), during operation, to a receive sub-band allocated to the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Regarding claims 5 and 15, the combination of Raleigh and Pasternak further teaches the electronically tunable diplexer is configured to operate in a transmit tuning range covering at least two transmit sub-bands of a system band, the electronically tunable diplexer being tunable (see Pasternak, Abstract and [0005]), during operation, to a transmit sub-band allocated to the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Regarding claim 6, the combination of Raleigh and Pasternak further teaches the electronically tunable diplexer is tunable, on site, to provide a passband narrower than a

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system band allocated to the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

Regarding claim 7, the combination of Raleigh and Pasternak further teaches a control unit connected to the electronically tunable diplexer and the transceiver for controlling frequency characteristics of the base station (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

***Allowable Subject Matter***

4. Claims 8-10 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 8, the combination of Raleigh and Pasternak teaches a base station according to claim 1, wherein the electronically tunable diplexer comprises a receive portion and a transmit portion connected to the antenna unit (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28), wherein the transceiver comprises a transmitter connected to the transmit portion of the electronically tunable diplexer (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28), and a receiver connected to the receive portion of the electronically tunable diplexer (see Pasternak, Abstract, fig.3, diplexer 308 and see page 10, Pasternak's claim 28).

The combination of Raleigh and Pasternak does not specifically disclose the base station further comprising a generator connected to the transmitter for providing

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the electronically tunable diplexer with an input test signal characterizing the radio frequency sub-band allocated to the base station, a transceiver loop connected to the electronically tunable diplexer and the transceiver for delivering a portion of the input test signal and a portion of an output test signal generated from the input test signal in the electronically tunable diplexer to the receiver, an analyzer connected to the receiver and a control unit for determining a response of the electronically tunable diplexer to the input test signal based on the portion of the input test signal and the portion of the output test signal, and the control unit connected to the electronically tunable diplexer and the generator for controlling tuning of the electronically tunable diplexer based on the response of the electronically tunable diplexer to the input test signal.

Regarding claim 16, the combination of Raleigh and Pasternak teaches a base station according to claim 11. The combination of Raleigh and Pasternak does not specifically providing the electronically tunable diplexer with an input test signal characterizing the radio frequency sub-band allocated to the base station, delivering a portion of the input test signal and a portion of an output test signal generated in the electronically tunable diplexer to a receiver, receiving the portion of the input test signal and the portion of the output test signal in the receiver, determining a response of the electronically tunable diplexer to the input test signal based on a received portion of the input test signal and a received portion of the output test signal, and tuning the electronically tunable diplexer based on the response of the electronically tunable diplexer to the input test signal.

**Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Goeken (US 4,419,766) teaches methods and means for providing improved air/ground radio telephone communications,

b. Ohgami (US 5,430,789) teaches cellular mobile base station apparatus for serving a first and second cell zones.

c. McConnell (US 6,961,019) teaches method and apparatus for reducing GPS receiver jamming during transmission in a wireless receiver.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (571) 272-7911. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should



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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nghi H. Ly

*NH Ly*  
11/07/05

*Charles Appiah*  
**CHARLES APPIAH**  
**PRIMARY EXAMINER**